

NOMENCLATURE OF BRITISH *LITTORINIDÆ*.

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THE species formerly included under *Littorina* seem sufficiently distinct in methods of reproduction to merit separation into distinct genera. It has long been known that *L. littorea* has pelagic egg capsules and passes through a free veliger stage, while *L. rudis* is viviparous, and *L. littoralis*, like the species of *Lacuna*, deposits eggs in ootheca on seaweeds.

Dr. Dall and others in recent years have assumed the type of *Littorina*, Férussac, to be *littoralis*, L., presumably following Rang's selection in 1829. But this species is not included in Férussac's original description, which is found in the Tableau, 1822, p. xxxiv:—

“*Paludina* . . . 5e S. G. Littorine, *Littorina*, Féruss.; *Turbo*, Lin.; *Trochus*, Adanson; *Kruck*, Ocken.”

Of these three references the first, *Turbo*, L., is too wide to give any indication; we may note, however, that it includes *littoreus*, *neritoides*, and *obtusatus*, but not *littoralis*, which is described under *Nerita*, L. The second, *Trochus*, Adanson, pl. xii, includes four species: Marnat = *Turbo punctatus*, Gm., allied to *saxatilis*, Olivi; Boson = *Turbo muricatus*, L., a *Tectarius*; Daki and Rifet, included in Gmelin's *Turbo afer*, and both, I think, indeterminate. The last reference is to Oken, Lehrbuch Naturg. iii, 1, 1815, p. 257, where we find: 4 Gattung, *Kruck*; 1 *Turbo littoreus*; 2 *Turbo punctatus*.

Thus the species available for selection as type are *punctatus*, *muricatus*, *afer*, and *littoreus*; and the selection is made by Blainville, 1828, in Dict. Sci. Nat., lvi, p. 98, where he refers to “le genre Littorine ayant pour type le *T. littoreus*”. So, too, Deshayes, 1843, in Lamarck, Hist. Anim. s. Vert., ed. 2, ix, p. 198, note; and, again, Gray in Proc. Zool. Soc., 1847, definitely designate *littoreus* as type of *Littorina*. *Algaroda*, Dall, 1918, with the same type is an absolute synonym.

For the *littoralis* group, Brown's name *Neritoides*, in Illust. Brit. Conch., 1827, pl. xliii, with sole species *littoralis*, is available. The previous *Neritoides*, Meuschen, 1779, does not invalidate Brown's name, since it occurs in an article in Naturforscher, xiii, p. 78, in which the author has not applied the principles of binary nomenclature (Rule 25b).

L. neritoides is usually referred to the genus *Melarhappe*, Menke, which occurs in synonymy in his Synopsis Methodica Molluscorum, 1828, p. 23: “*Paludina glabrata*, Zgl. (*Turbo cœrulescens*, Lam., *T. rupestris*, Chabr., *Melarhappe glabrata*, Mhlfid.)” *Paludina glabrata*, Zgl., is described by C. Pfeiffer, 1828, in Naturg. Deutsch. Moll., iii, p. 46, and from the figure must be *Turbo neritoides*, L.; these names in the second edition of Menke's Synopsis, 1830, are all

included under *Littorina Basterotii*, Payr., which removes any doubt as to the species intended.

For *Littorina rudis* (Maton), which must take the earlier name of *saxatilis*, Olivi, we can use *Littorivaga*, Dall, 1918, in Proc. Biol. Soc. Washington, xxxi, p. 137. The type is *L. sitchana*, Philippi, a form scarcely distinct from *L. groenlandica*, Menke.

In view of the small number of British species of Littorinidæ, it may be considered convenient to sink these names as subgenera of *Littorina*; but it may be pointed out that malacologically the recognized genus *Lacuna* is closer to *Neritoides* than *Littorivaga* is to *Littorina*. Accordingly I would group our species as under.

Genus LITTORINA, Férussac, 1822. Type: *Turbo littoreus*, L.

1. LITTOREA (L.), 1758. Normally, the angle of the spire is about 90°. Some northern forms have a more acute spire and more elongated body whorl. The form *brevicula*, Jeffreys, 1865 (= *conoidalis*, Locard), is more globose, with a less produced spire, which forms an angle of about 120°. The estuarine form *paupercula*, Jeffreys, is scarcely distinct from *brevicula*.

Genus LITTORIVAGA, Dall, 1918. Type: *L. sitchana*, Philippi.

2. SAXATILIS (Olivi), 1792 (as *Turbo*). The variation of this polymorphous species has been fully discussed and beautifully illustrated by Dautzenberg and Fischer in Rés. Camp. Sci. Monaco, xxxvii, 1912, pp. 187-201. Their arrangement is convincing, and is quoted here for convenience of reference:—

(a) Subsp. *saxatilis*, *typica*, with v. *lugubris*, D. & F., and v. *nervillei*, D. & F.

(b) Subsp. *tenebrosa*, Mont., 1803, with v. *elata*, D. & F., and v. *similis*, Jeff.

(c) Subsp. *jugosa*, Mont., 1803, with v. *bynei*, D. & F.

(d) Subsp. *patula*, Thorpe, 1844, with v. *attenuata*, D. & F.

(e) Subsp. *nigrolineata*, Gray, 1839, with v. *compressa*, Jeff., and v. *matoni*, D. & F.

(f) Subsp. *rudis*, Maton, 1797, with v. *globosa*, Jeff., and v. *rudissima*, Bean.

(g) Subsp. *groenlandica*, Menke, 1830.

The form *tenebrosa* can hardly be ranked as a distinct species, since there are intermediate forms connecting with *jugosa* through *similis*, while other examples approach *saxatilis* and even *rudis*. The northern race *groenlandica* is certainly to be included in this species, and I have taken a series of graded forms in Orkney ranging from *similis* at ordinary high-water through *jugosa* above high-water to *groenlandica*, which may be found even 40 or 50 feet higher still, as described by Dacie in Journ. of Conch., xv, 1917, p. 179, where he gives this form the name of *alticola*, which should be rejected as a synonym of *groenlandica*.

Genus MELARHAPHE, Menke, 1828. Type: *Paludina glabrata* = *Turbo neritoides*, L.

3. NERITOIDES (L.), 1758. Linné's species is the Mediterranean shell, and if a name is required to distinguish our race, which only differs slightly from it, we can use Montagu's name *petræa*.

Genus NERITOIDES, Brown, 1827. Type: *Nerita littoralis*, L.

Dautzenberg and Fischer, in Journ. de Conchyl., lxii, 1915, pp. 87-128, have given a full account of the species *obtusata* and *littoralis* and their variation. *Littorina æstuarii*, Jeffreys, seems a good species, and Dautzenberg, in correspondence 1920, regards it as distinct.

4. OBTUSATA (L.), 1758. The type specimen is figured by Hanley in *Ipsa Linnaei Conchylia*. It is the same as *Littorina arctica*, Möller, and the American race is *L. palliata*, Say. Occurrence in Britain doubtful.

5. ÆSTUARIÏ (Jeffreys), 1869.

6. LITTORALIS (L.), 1758. The northern subspecies is v. *compacta*, Jeffreys. The typical subspecies includes v. *pachychila*, D. & F., and v. *retusa*, Lamarck; the former is the thick heavy shell common on both sides of the English Channel, the latter is the same as *neritiformis* of Brown.

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* * Note added after reading by permission of the Publication Committee.

Although I have followed M. Dautzenberg above in regarding *Turbo saxatilis*, Olivi, as conspecific with *T. rudis*, Maton, I think it better to retain the latter name for our British forms, until Olivi's species has been examined anatomically. The very close resemblance between the isolated Venetian colony and some forms of our species may be only convergence of shell form, when we recall how close some forms of *rudis* and *littorea* are in shell characters, so that they are not easily distinguished without examining the soft parts.

Another point raised in discussion was that as the distinctions between the genera were mainly methods of reproduction, they were œcological, and should have no place in a classification based on morphology. The two closest groups are *Littorina* s.s. and *Neritoides*, and to my mind the distinction between a mollusc with a free veliger stage and one that does not pass through this stage still seems of generic importance; while in the other groups the genera could be separated on anatomical and conchological distinctions. Those who do not see with me in this may regard the names as of subgeneric rank.

This seems a good opportunity for killing the name *Bacalia*, Gray, 1840, a *nomen nudum* which becomes valid in 1854 when H & A. Adams introduced it in synonymy in *Genera*, i, 312. I choose as type *littorea*, Linné; it thus becomes an absolute synonym of *Littorina*, Férussac.